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(21) International Application Number: PCT/US00/07995 (22) International Filing Date: 23 March 2000 (23.03.00) (30) Priority Data: 60/125,717 23 March 1999 (23.03.99) US (71) Applicant (for all designated States except US): CYTOCLONAL PHARMACEUTICS, INC. [US/US]; 9000 Harry Hines Boulevard, Dallas, TX 75235 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): SIDHU, Rajinder, S. [US/US]; 7521 Danfield Court, Dallas, TX 75252 (US). BOLLON, Arthur, P. [US/US]; 13227 Cedar Lane, Dallas, TX 75234 (US). MU, Jing-Hong [CN/US]; 534 Newberry Drive, Richardson, TX 75080 (US). (74) Agents: HANSEN, Eugenia, S. et al.; Sidley & Austin, Suite 3400, 717 N. Harwood, Dallas, TX 75201 (US).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>	
(54) Title: FUNGAL BETA-TUBULIN GENES			
(57) Abstract <p>The anticancer drug taxol binds to beta-tubulin in assembled microtubules (MT) and causes cell cycle arrest in animal cells; in contrast, the effect of taxol varies in fungi. For instance, the taxol-producer <i>Pestalotiopsis microspora</i> Ne32, an ascomycete, is resistant to taxol (IC₅₀>11.7 M), whereas <i>Pythium ultimum</i> and <i>Phytophthora cinnamomi</i>, two oomycetes, are sensitive to taxol (IC₅₀ 0.1 µM). cDNAs encoding beta-tubulin from <i>P. microspora</i>, <i>P. ultimum</i>, and <i>P. cinnamomi</i> were isolated. The deduced amino acid sequences of beta-tubulin from <i>P. microspora</i>, <i>P. ultimum</i>, and <i>P. cinnamomi</i> can be used in (1) binding assays for the detection of taxol and taxol-like substances; (2) diagnostic assays for the pharmacologic efficacy of taxol against a tumor sample; (3) designing drugs with taxol-like activity via application of information regarding the effect of specific residues on taxol binding; and (4) detection of taxol and taxol-like activity via use of taxol-sensitive and taxol-resistant isogenic strains of <i>P. ultimum</i> constructed by substitution of residues necessary for taxol binding.</p>			